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METHOD FOR CONTROLLING CRITICAL DIMENSION BY UTILIZING RESIST SIDE-WALL PROTECTION

Abstract

A method for controlling line width critical dimension is disclosed. A semiconductor layer is deposited on a substrate. A cap layer is formed on the semiconductor layer. A patterned photoresist is formed on the cap layer. The patterned photoresist has a top surface and vertical sidewalls. A silicon thin film is selectively sputtered on the top surface and vertical sidewalls of the patterned photoresist, but not on the cap layer. The silicon thin film, which has a thickness: x above the top surface and a thickness: y on the sidewalls of the patterned photoresist, wherein xx< , is used to protect the patterned photoresist. Using the silicon thin film and the patterned photoresist as an etching mask, the cap layer is anisotropically etched thereby transferring the photoresists pattern to the cap layer. Finally, using the cap layer as an etching mask, the semiconductor layer is etched.